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Reprinted from the New York Medical Journal for
September 26, 1908.

THE EARLY RELATIONSHIP OF THE OOSPERM TO THE ENDOMETRIUM.

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There is a general belief that when the fertilized ovum in the human female arrives in the uterus its detention therein is due either to the decidua growing up around and so enveloping it that it becomes lodged in an accessory ovigerous chamber constituted largely of the so called decidua reflexa or to the oosperm penetrating the endometrium and embedding itself to a greater or less extent in the uterine wall, the decidua thereafter closing rapidly over it in the form of a so called decidua capsularis. In either case, it is alleged, an adventitious chamber is formed, which serves to retain the oosperm in, but, nevertheless, excludes this body from the cavity of the uterus, and the mechanism whereby this is effected is in the two cases very dissimilar. In the former the entire chamber results from a localized overgrowth of the inner lining of the uterus and without the expenditure practically of any energy on the part of the oosperm, whereas in the latter the endometrium is attacked by the oosperm, which bores its way into the substance of the uterus, not through the agency of any vital pressure, but through the limited action of some solvent secreted by the oosperm itself; the breach thus created being rapidly repaired by a so called decidua capsularis.

The uterus is specifically endowed for the process of gestation, and under ordinary circumstances it responds so readily to the stimulus of an oosperm that without let or hindrance it offers a sufficiency of those materials which are requisite and necessary

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for embryonic development and growth; consequently we must banish from our minds the idea that the oosperm is at any time in any sense of the word a parasite.

Too unhesitatingly, in my opinion, and on very slender testimony indeed, it has been admitted and proclaimed that the oosperm is detained in the cavity of the uterus in some sort of decidual envelope.

Let me here recall some facts concerning the subject of placentation in the lower animals, as we may thereby glean some very valuable information. In cetaceæ the germ mass from first to last is everywhere placental, so that during the whole period of gestation in this mammal the processes of metabolism in the embryo are carried on by diosmosis through the agency of the entire chorion, the mucous lining of the uterus in its whole extent being at the same time both a secreting and an absorbing structure. In this case the villous bodies of the whole chorion are to all intents and purposes similarly endowed, there is no functional distinction. In the horned ruminants we find a remarkable modification of this universal placenta; some villi atrophy but here and there over the entire surface of the chorion groups of villi hypertrophy and growing more and more form eventually many separate placentulæ. These patchy overgrowths in the chorion correspond with and are correlated nutritively to cotyledonary processes or caruncles which may be observed studding the interior of the uterine horns in these animals. In the cow these cotyledonous placentulæ are sometimes exceedingly numerous; in individual cases as many as eighty have been detected. Again, in the cat and carnivorous animals generally the placenta is more or less annular in shape, the villi participating in its formation being grouped together like a belt, whilst the villi over the rest of the chorion have practically vanished.

In all the lower mammals, not even excepting the monkey, the germ mass is detained in the uterus neither by a decidua reflexa nor yet by a decidua capsularis, but by osmotaxis and chemiotaxis, and under ordinary circumstances these same agencies in the human female cause not only a halt, but arrest the progress of the oosperm immediately this body reaches the cavity of the uterus. The condition of affairs, which obtains in the lower mammals, does not encourage us to accept the tenet that the oosperm is ever lodged in an accessory chamber in the cavity of the uterus, and clinically we are justified in rejecting the dogma altogether. If we assume that encapsulation takes place through the oosperm secreting some substance which attacks and eats away a limited portion of the uterine wall it is, nevertheless, impossible for us to believe that in this procedure Nature would never err, and that we should never find some evidence of this solvent material exceeding its physiological function and causing a too extensive destruction of the uterine tissues. Errors of this kind are often observed. Take the dissolutionary changes which should restore the uterus to its normal state after parturition. These dissolutionary changes may transcend the usual amount and may leave the uterus in a state of superinvolution, the utility of the organ being forever thereafter annulled. Similarly in the oosperm itself, when about the fifth or sixth week of pregnancy, the utility of the villous bodies constituting nearly four fifths of the chorion is abolished, the atrophic process may invade the placental as well as the nonplacental area, causing a hyperatrophy of the villous bodies of the chorion, and no placenta or a very inefficient one may thereby result.

In the human female, after the fifth or sixth week of gestation, metabolism in the embryo is effected through the medium of a limited portion of the endometrial lining, the decidua placentalis; but prior to this, both before and after the whole villous surface of the chorion becomes vascular, the well being of the embryo is maintained by diosmosis through the entire periphery of the germ mass, and in this phenomenon the lining membrane of the whole cavity of the uterus participates. During the first five or six weeks of gestation, therefore, the human embryo is nourished in the same way as a cetacean fœtus during the whole period of pregnancy, and it is difficult to believe that in the former case Nature would furnish either a decidua capsularis or a decidua reflexa, and render nugatory thereby practically one half of the villous surface of the chorion. Moreover, in consequence of some breach in the continunity of the rapidly enlarging vessels in the decidua placentalis, hæmorrhage from the external genitals is often observed towards the sixth week of pregnancy, and in spite of a prolonged continuance of free hæmorrhage from this quarter the development and growth of the embryo may proceed uninterruptedly and the fœtus may be and very frequently is carried to maturity. If, however, a decidua capsularis or a decidua reflexa existed it is very evident that no blood emanating from the actively enlarging maternal vessels could escape externally without bursting the accessory ovigerous chamber, and this would either sweep the embryo away or speedily cause its death. Again, complete placenta prævia becomes an unthinkable condition if we believe that the germ mass in the uterus is ever harbored in a secondary chamber. Once more, it sometimes happens that the placenta is composed of two lobes, separated by a greater or less amount of nonplacental chorion, and one of these lobes may be implanted on the anterior, whilst the other is implanted on the posterior wall of the uterus, the nonplacental part uniting them being located at the fundus. Under such circumstances it is inconceivable that a decidua reflexa, and still more a decidua capsularis, could ever have been evolved.

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